

ABSTRACT

A filter for a drill string comprises a perforated receptacle having an open end and a perforated end and first and second mounting surfaces are adjacent the open end. A transmission element is disposed within each of the first and second mounting surfaces. A capacitor may modify electrical characteristics of an LC circuit that comprises the transmission elements. The respective transmission elements are in communication with each other and with a transmission network integrated into the drill string. The transmission elements may be inductive couplers, direct electrical contacts, or optical couplers. In some embodiments of the present invention, the filter comprises an electronic component. The electronic component may be selected from the group consisting of a sensor, a router, a power source, a clock source, a repeater, and an amplifier.